

ArevaEPRDCPEm Resource

From: Tesfaye, Getachew
Sent: Tuesday, December 21, 2010 7:17 AM
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Subject: Draft - U.S. EPR Design Certification Application RAI No. 466 (5296), FSAR Ch. 6
Attachments: Draft RAI_466_SPCV_5296.doc

Attached please find draft RAI No. 466 regarding your application for standard design certification of the U.S. EPR. If you have any question or need clarifications regarding this RAI, please let me know as soon as possible, I will have our technical Staff available to discuss them with you.

Please also review the RAI to ensure that we have not inadvertently included proprietary information. If there are any proprietary information, please let me know within the next ten days. If I do not hear from you within the next ten days, I will assume there are none and will make the draft RAI publicly available.

Thanks,
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Email Number: 2384

Mail Envelope Properties (0A64B42AAA8FD4418CE1EB5240A6FED1248C72B7B8)

Subject: Draft - U.S. EPR Design Certification Application RAI No. 466 (5296), FSAR Ch.
6
Sent Date: 12/21/2010 7:16:42 AM
Received Date: 12/21/2010 7:16:44 AM
From: Tesfaye, Getachew
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Files	Size	Date & Time
MESSAGE	722	12/21/2010 7:16:44 AM
Draft RAI_466_SPCV_5296.doc		38394

Options

Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

Draft

Request for Additional Information No. 466 (5296), Revision 0

12/21/2010

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 06.02.01.02 - Subcompartment Analysis
Application Section: 6.02.01.02

QUESTIONS for Containment and Ventilation Branch 1 (AP1000/EPR Projects) (SPCV)

06.02.01.02-8

Follow-up to RAI 266, Question 06.02.01.02-2

In Table 06.02.01.02-2-4 of Response to RAI 266, Question 06.02.01.02-2, Supplement 8, the calculated break flow from pipe KBA10BR004 is significantly lower (about 45%) than either the staff's estimates, or the break flow calculated by the applicant for similar pipes (KBA10BR002 and KBA10BR003) under similar conditions. Furthermore, among the subcompartment pressures reported, the CVCS valve room (UJA07029) reached the highest value, 39.4 psia. The bounding high energy line in this compartment is pipe KBA10BR004, the pipe mentioned above.

Explain the rather large discrepancy between the break flow calculated for pipe KBA10BR004 and the break flow calculated for other similar pipes. Correct the break flow calculations for KBA10BR004, if needed. Also, correct the subcompartment pressure calculations of all subcompartments that house pipe KBA10BR004, if needed.

06.02.01.02-9

Follow-up to RAI 266, Question 06.02.01.02-3

U.S. EPR FSAR Rev. 2 Table 6.2.1-10 provides peak pressures calculated for seven critical subcompartments. Table 06.02.01.02-3-1 of Response to RAI 266, Question 06.02.01.02-3, Supplement 8, lists subcompartment peak pressures for 21 critical subcompartments for which the revised calculations result in pressures in excess of 5.0 psig. There are only four subcompartments with results available from both, the FSAR Rev. 2 calculations and the revised calculations. The revised calculations use the SRP recommended break flow models, which are expected to predict higher break flow rates and higher subcompartment pressure than the FSAR calculations. Two of the rooms, the pressurizer cavity and the pressurizer relief valve cavity, show increased pressures, as expected. However, the peak calculated pressures of the two steam generator loop cavities (23-004 and 29-004) are reduced. The pressures are smaller in the revised calculations.

- a. Explain the reduction in peak pressure calculated for the steam generator loop cavities, make corrections if needed. The requirement is to perform a conservative subcompartment analysis. If the FSAR calculations provide higher

peak subcompartment pressures in some cases, then which of the two values (FSAR or revised calculation) is used for subcompartment design? Justify selection of the peak subcompartment pressure used for design. Also, please provide a complete list of all subcompartments where peak pressure calculated with the FSAR methodology exceeds the value calculated with the revised method. Include in the listing the peak subcompartment pressures calculated with both methods.

- b. Explain why those subcompartments listed in FSAR Rev. 2 Table 6.2.1-10 as critical are missing from the revised calculation Table 06.02.01.02-3-1 of critical subcompartments.

06.02.01.02-10

Follow-up to RAI 266, Question 06.02.01.02-2

The Response to RAI 266, Question 06.02.01.02-2, Supplement 8 Table 06.02.01.02-2-1 lists 87 subcompartments with high energy lines. The staff understands that the resulting potential pipe rupture pressures for some these subcompartments were calculated using one of two GOTHIC models which were provided to the NRC staff: one model for the equipment space and a model for the service space.

- a. The staff notes that several of the subcompartments of Table 06.02.01.02-2-1 do not appear in either GOTHIC model. These subcompartments are:

7-18
7-20
7-21
7-22
7-23
7-24
7-26
7-27
7-28
7-29
18-13
29-8
29-19
29-23
34-14
34-15

Explain how the pressure from potential pipe breaks was evaluated for these compartments and justify their omission from the GOTHIC containment subcompartment models.

- b. The staff notes that the "Room Volume" given in Table 06.02.01.02-2-1 for several of the subcompartments does not match the volume input to the subcompartment in the GOTHIC input. These subcompartments are:

7-13
7-14
7-15
7-16

11-4
11-14
11-15
11-16
11-18
11-20
11-22
11-23
11-24
11-25
11-26
11-27
11-28
18-2
18-3
18-4
18-5
18-7
18-8
18-9
18-14
18-15
18-16
23-2
23-3
23-4
23-5
23-7
23-8
23-13
23-15
23-16
29-3
29-4
29-7
29-14
29-15
29-16
34-7
34-19

Provide justification as to why the room volumes of Table 06.02.01.02-2-1 do not match the GOTHIC input. Which values are correct?